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inum, and was as large as the domestic cat. The existence of peculiar forms of lizard, serpents and lemurs constitutes points of resemblance to the Eocene fauna of Wyoming not previously recognized in our Miocene formations.

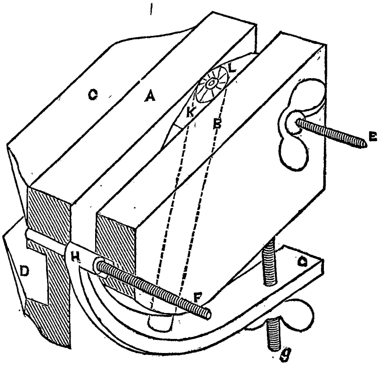
The Genus Protohippus.—This form of horse is characterized, according to Leidy, by a peculiarity of the permanent teeth which belongs to the temporary teeth of *Equus*. Prof. Cope has recently obtained nearly complete skeletons of several species, and finds that like *Hippotherium* they have three toes. He describes a new species, *P. sejunctus*, in which the legs are considerably longer and the head relatively larger than in the true horse, having thus proportions of body, as well as dentition resembling the colt.

MICROSCOPY.

A New Form of Microtome.—The microtome in common use consists essentially of a round hole in which the object is wedged, and forced above the guiding surfaces of the instrument by a screw acting beneath. Various forms are to be found that differ in size, but agree in principle, that of Beck being, perhaps, as convenient as any, though I have used one consisting of a disk furnished with a graduated series of holes and revolving so that any desired aperture could be brought over the screw, which, for making sections of stems was much more desirable. Dr. Hunt of Philadelphia has the apparatus set in a freezing box, thus making a refrigerating microtome, and by bedding animal structures in soap, which expands and fastens them more strongly than paraffine or other compositions used for that purpose, it answers very well.

But having occasion to cut a number of plant tissues, especially fern stems, I found it very desirable to have oblique sections, to show more perfectly the scalariform tissue, and the only way I could accomplish this with the ordinary instrument was to cut a diagonal crease in the flat sides of a split cork, to hold the stem, and, inserting the cork, cut the whole as one piece and sort out the ferns from the cork. Some tolerable sections were obtained in this way, but the results were generally so unsatisfactory that I was led to devise a new instrument capable of more adaptation, the construction of which is shown in the accompanying figure. *A* and *B* are guiding surfaces (in my instrument of glass), formed on two parallelograms of metal, the outside of *A* carrying lips *C* and *D*, the latter provided with a thumbscrew by which it can be fastened to a table. The front ends of *A* and *B* in the drawing are cut off to show the arrangement of the rods *E* and *F* that are firmly inserted in *A*, but permit *B* to slide freely on them. They are threaded on the outer ends and have thumbscrews by which *B* can be pressed to *A;* the thumbscrew on *F* not shown. *H* is a sleeve on *F* forming one end of the curved lever *G*, that has a motion regulated by the screw *I* hanging from the rod *E*.

Fig. 45.



To use the instrument some narrow pieces must be provided equal in length to the depth of the instrument. These pieces I call blanks, and they may be of rubber, paper, or wood, slightly thicker than the stem to be cut, which stem should not be more than half as long. A follower is also required as large as the stem and so long that with the stem it will reach from the guiding surfaces to the lever *G*, when the latter is pressed down as far as *I* permits. Laying the instrument on its side remove *B*, lay the stem on *A*, at any desired angle to the guide, bring a blank up to it on either side, insert the follower, replace *B*, screwing it up tight, and by the screw *I*, which should be very fine, the lever *G* forces the follower and stem above the guides as in the old instruments. For animal tissues, they are bedded in soap in little paper boxes, and when cold the mass is treated as a stem. A vessel with an inner lip to hold the microtome, and screw working through the bottom, makes it refrigerating. Longitudinal sections of wood are beautifully cut, by clasping one end a little tighter than the other, against which the follower works, the section thus commencing at nothing. Of course a variety of followers and blanks can easily be provided to suit various cases, and a little manual tact is required, but in my hands I find it takes less time for manipulation than any other instrument, with a range of work before impossible. — WM. H. SEAMAN, *Howard University.*